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3. *Notes to the 'Journey from Ningpo to Shanghai.'* By CHRISTOPHER T. GARDNER, Esq., F.R.G.S.

NOTE I.—ON COTTON CULTIVATION IN CHINA.

PERHAPS a few remarks with regard to cotton cultivation in China, and the Che-kiang province particularly, may be of interest. Before the American war had made raw cotton a desideratum in Europe, and before our last treaty with China, entailing a rapidly increasing demand for cotton fabrics, the raw material was not much cultivated in China, and it even formed an article of import. The American war, however, raising as it did the price, made the cultivation of cotton a most lucrative species of agriculture in China, more especially in the northern provinces, where the crop, by its long staple, is most suitable to our English machinery. Large crops there, and in the central provinces of the sea-border, created a demand for it in the western provinces, which are more suitable for other cultivation. In Che-kiang especially, land utterly devastated and laid waste by the rebellion has been devoted to the growth of cotton until last year, when, though all calculations must partake more of rough guesses than of reliable estimates, I should imagine there were over 100,000 acres planted with cotton, yielding a crop of about 25,000,000 lbs. In 1866 the Cotton Supply Association sent about 1 cwt. of Egyptian cotton-seed to be planted in this province as an experiment. Unfortunately it was a complete failure, and for many reasons:—1st. The quantity of seed was not sufficient for a fair experiment. 2nd. It arrived in a very bad condition. 3rd. The climate of Egypt does not in the least resemble that of the province of Che-kiang. What I would suggest is that the trial should be made on a much larger scale with New Orleans seed, carefully packed, and that the mode of cultivation in use at New Orleans should be likewise imparted. Land in this province is principally cultivated by small proprietors, and is generally hereditary property, held in trust for the benefit of all the members by the head of the family. Chinese law puts every obstacle in the way of the alienation of land from hereditary owners, and, as primogeniture is not in vogue here, every Chinaman has a plot of ground, or rather share in a plot, belonging to his family or clan. The few large landed proprietors in the province do not farm their own ground, but sub-let it in very small lots. Hired agricultural labourers are very few, since the members of a family all work together on land in which they have a common interest, communism of property in Chinese families being carried to an extent wholly unheard of, I believe, in any other nation of the world; when, however, labourers are hired, they receive ordinarily the following wages:—By the day, 1s. 3d.; by the month, 25s. This, of course, refers to strong-bodied men for ploughing, &c., and even they have to buy their own food. In the cultivation of cotton, hired labour is almost unknown; the watching the crop, the picking the cotton, &c., being performed in nearly every instance by the female portion of the owner's family, while the men are engaged in the more disagreeable and laborious work of the paddy fields.

With regard to the quantity of labour available in this province, it is unlimited. The Chinese, though a contented and happy people, among whom pauperism is an unknown thing, live in unhealthy huts, and feed most sparingly. The reason of this being that, in spite of the natural industry of the people, this province is over-populated, and there is not work enough for them to do. The annual rent of land, including Government land-tax, is about 4*l.* an acre. A very slight injury is done to cotton by a sort of locust or cotton fly, and none, I believe, by worms. As far as I know, the only way that the injury done to cotton by locusts is attempted to be obviated in this province, is by keeping a child in the cotton-fields to drive the insects away in June, this being the only

time when their ravages are of importance. After June the cotton-fly either disappears or finds the cotton-plant unsuited to its palate. Other causes of injury to the cotton crops are the overflowing of the river and consequent swamping of the low-lying fields. (It is not, according to the Chinese, the salt, so much as the moisture, that spoils the crops.) Strong winds, at the time of the flowering of the cotton, occasionally make great havoc; and lastly, heavy rains, which fill and rot the cotton. These climatic influences are provided against by a reference to the almanack and the choice of a time for sowing the seed, so that the plant may be in such condition at the time of their occurrence as to receive as little injury as possible. Many of the weather prophecies of the Chinese almanacks are as unreliable as those of Zadkiel, &c.; but recorded observations of many centuries of weather, and the Chinese system of lunar months instead of solar (the moon affecting, as it does, the tide and weather more than the sun) gives the Chinese prophecies, with regard to rain, &c., far greater correctness than such prophecies possess elsewhere. In the beginning of May, the cotton cultivator, having consulted the almanack as above explained, and taken the advice of a fortune-teller as to a lucky day and one likely to appreciate *fêng shui* (influences of geomancy), sows the cotton-seed. In five days the seed sprouts. In the end of May the cultivator covers his field with a manure of wood-ash. In August the plant flowers, and it is ready to be gathered in September or October, after which the ground is refreshed by having beans planted on it. Cotton is never grown on the same fields as rice. Hemp, corn, and the egg-plant, are used to alternate cotton crops, though cotton is often grown several years successively on the same land. The best cotton in this province grows on the low plains, and is manured by what the Chinese call "vegetable cake," that is, decayed plants pressed into a cake about 6 feet in circumference and 4 inches thick, the addition of a little oil giving the cohesion necessary for its convenient transportation. The Chinese idea is that one man can work about an acre of cotton. The cotton grown in this province is chiefly for export to the western provinces, and is shipped unpressed in spite of the heavy expenses of freight, since the primitive nature of the Chinese machinery renders it difficult for the natives to work pressed cotton. Besides the cotton exported, a large amount is used for local consumption.

NOTE II.—TRANSLATION OF THE CHINESE 'GOVERNMENT GAZETTEER' WITH REGARD TO THE ORIGIN OF CHÉ KIANG SEA-BARRIER.

Various dynasties have been engaged in constructing the sea-barrier at Chien tang, Yen lio and Ning hai, in the prefecture of Hang-chow. According to the *Ti li chie* geography book, published in the time of the Tang dynasty, a salt commissioner put up the road on the top of the sea-barrier for 224 li. It was the first year of Kai Yuan that it was again made. (N.B. The *Liang che yin fu*, which states, with regard to the expression "again made," that it is evident the work was not begun in the first year of Kai Yuan: when the work was begun there are no means of discovering.) According to the *Liu lin* records, a book of the Hsien Shun reign, the Hang-chow people for a long time suffered from the river being affected with the sea-tides, when, at the time Pai lo tien was sub-prefect, two or three *Wên chang* were written and presented with prayers to the spirits of the river, setting forth that human force was of no avail. That previously to this, in the time of the Chang dynasty, in the eighth moon of the fourth year of Kai ping, Ch'ien Prince of Wu-so, was the person who first built the river-wall outside the ancient Hou Ch'as and present Lung Chiang gate (of Hang-chow), as, the tide beating up by night and day, the (previous) wooden breakwater had proved of no avail, so he ordered several hundred men with powerful catapults to shoot at the head of the tide; meanwhile he earnestly prayed at the Hsu-shan-szu, and wrote a

poem, which he closed and sealed, and placed in the Hai-mun-shan (Sea-gate-hill); that after this the tide retreated from Chien tang and went last to Szuling. He immediately made a bamboo frame-work, which he filled with large stones, and planted therein great trees, which thus made an efficient sea-wall. After some time had elapsed, the city of Hang-chow was built. Chu-lo, which is the same as the present Ping-lo, was at that time part of the river. The 'Ho chü chi' (record of rivers and creeks), a book of the Sung dynasty, states that the Chi River joined the sea, and daily received two sea-tides; but that in the time of Kai-ping, of the Liang dynasty, Chien Prince Wu-so commenced to prevent the encroachment of the sea by making a sea-barrier outside the Hou chao mén of Hang-chow. The barrier and bank being solid, the people dwelling there were at ease. At the time of Ya Chiung, of the Sung dynasty, in the fifth year of Chiang-fu, the Hang-chow people reported that the tide of the river Chi had broken down and destroyed the west and north barriers, and the flood was but very little way from the city. The people were in a fright, so officers were appointed, namely, Chieh Lun, sub-prefect of Hang-chow, and Chen-Ya, salt commissioners, to devise means of protecting the bank. Chieh Lun and the others took soldiers and felled timber in order to protect the bank from the breakers. In the seventh year (of Chiang-fu), Chieh Lun, &c., departed, and in their place were sent the salt commissioners Le Po and the palace officer (eunuch) Lo Show Ch'ing, who, considering that the thing was not as it ought to be, requested that the ancient plan of *Ch'ien* might be resorted to, viz., of piling and filling in bamboo framework with stones. In order that the barrier might be solid, stakes were piled, the barrier was increased, and made for 7 li, at which there were several myriad workmen required for the collection of the materials. Next year the work was finished, and was perpendicular from ridge to base, in order to stop the force of the tide so that not even the bores, which are several tens of feet high, could do any injury. At the time of Chiung yü it is stated that the stone bank of the Chih River, not having been repaired for a long time (got out of repair), and people feared they would be drowned. Chang hsia, Assistant Secretary of the Board of Works, was accordingly deputed to look after the affair; he ordered the military officers and soldiers who were stationed about the river to collect stones and material for mending the barrier. Wherever it was broken there he mended, so all the people were in security. For this the men of the neighbourhood erected a shrine to him, and the Emperor also rewarded his merit, and bestowed upon him the posthumous title of Ning Chiang how (Earl of Ningpo River).

According to the 'Yü hsien ching chuan' (Life of Yü hsien ching), a book of the Sung dynasty, while Yü hsien ching was Counsellor to the Emperor, and one of the tutors in the Imperial Palace was Prefect of Hang-chow, a mighty storm arose, and the tide of the river broke the barrier; he sent a multitude of troops to dig in the western hills, and made a bank of several tens of li in length, so that the people were at ease. The 'Wang li Häng Chow foo chieh' (the records of Hang-chow, published in the time of Wan-li) states that, in the third year of Ching yuan, an Imperial edict was issued highly praising Yü hsien ching, &c.